	L #	Hits	Search Text	DBs	Time Stamp
1	L1	2	luciferin near4 regenerat$	USPAT; US-PGPUB	2003/08/06 14:21

US-PAT-NO: 5891659

DOCUMENT-IDENTIFIER: US 5891659 A

TITLE: Bioluminescent adenosine phosphate ester assay and reagent

DATE-ISSUED: April 6, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Murakami, Seiji	Noda	N/A	N/A	JP
Sakakibara; Tatsuya	Noda	N/A	N/A	JP
Eisaki; Naoki	Noda	N/A	N/A	JP
Nakajima; Motoo	Noda	N/A	N/A	JP
Imai; Kazuhiro	Tokyo	N/A	N/A	JP

APPL-NO: 08/805613

DATE FILED: February 26, 1997

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	8-070911	March 4, 1996

US-CL-CURRENT: 435/8, 435/15 , 435/21

ABSTRACT:

There is provided a bioluminescence reagent comprising at least pyruvate orthophosphate dikinase, phosphoenolpyruvic acid, pyrophosphoric acid, magnesium ion or another metallic ions, luciferin and luciferase, which reagent is such that the amount of luminescence is maintained in a high level and moreover stably without decaying for a long time in a bioluminescence reaction, and there is provided a method for quantitatively determining an adenosine phosphate ester or a substance taking part in the ATP conversion reaction in high sensitivity and high accuracy using an inexpensive and simple measuring apparatus

7 Claims, 5 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 5

---------- KWIC ----------

Brief Summary Text - BSTX (25):

The present inventors have intensely made sequential researches to solve these problems, and they have found that when a reagent comprising ATP regenerating enzyme, substrates of ATP **regenerating enzyme, magnesium ion, luciferin** and luciferase is reacted with a sample containing an adenosine phosphate ester, the amount of luminescence is maintained in a high level and moreover stable without decaying for a long time, and it gets possible to quantitatively determine the adenosine phosphate ester in high sensitivity and high accuracy using an inexpensive and simple measuring apparatus wherein said ATP regenerating enzyme catalyzes the formation of ATP from AMP.

US-PAT-NO: 5814504

DOCUMENT-IDENTIFIER: US 5814504 A

TITLE: Protein involved in **regenerating firefly luciferin**

DATE-ISSUED: September 29, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kajiyama; Naoki	Chiba	N/A	N/A	JP

APPL-NO: 08/ 869996

DATE FILED: June 5, 1997

PARENT-CASE:

PROTEIN INVOLVED IN **REGENERATING FIREFLY LUCIFERIN**

This application is a continuation of Provisional application No. 60/[illegible]71, filed Aug. 22,1996.

US-CL-CURRENT: 435/189, 435/8 , 530/417

ABSTRACT:

A purified protein having a molecular weight of 40 kD by SDS-PAGE that produces firefly luciferin when combined with D-cysteine and firefly oxyluciferin and isolated from firefly species is provided, as well as methods of making and using the protein for the continuous **regeneration of of firefly luciferin**.

20 Claims, 0 Drawing figures

Exemplary Claim Number: 1

---------- [illegible] ---------

Abstract Text - ABTX (1):
A purified protein having a molecular weight of 40 kD by SDS-PAGE that produces firefly luciferin when combined with D-cysteine and firefly oxyluciferin and isolated from firefly species is provided, as well as methods of making and using the protein for the continuous **regeneration of of firefly luciferin**.

TITLE - [illegible]:

Protein involved in **regenerating firefly luciferin**

Parent Case Text - PCTX (1):
PROTEIN INVOLVED IN **REGENERATING FIREFLY LUCIFERIN**

Brief Summary Text - BSTX (1):
PROTEIN INVOLVED IN **REGENERATING FIREFLY LUCIFERIN**

Brief Summary Text - BSTX (4):
The present invention relates to a protein involved in **regenerating luciferin**

Brief Summary Text - BSTX (8):
Under existing circumstances, no protein acting on oxyluciferin to **regenerate luciferin** as the luminescence substrate has been isolated and purified.

Brief Summary Text - BSTX (11):
The object of the present invention is to provide a protein having the ability to **regenerate luciferin** by acting on oxyluciferin and D-cysteine.

Brief Summary Text - BSTX (12):
As the result of the eager research, the present inventors found that a protein having the ability to **regenerate luciferin** by acting on oxyluciferin and D-cysteine is present in living Coleoptera, and they successfully isolated and purified the protein.

Brief Summary Text - BSTX (14):
(1) A protein having the ability to **regenerate luciferin** by acting on oxyluciferin and D-cysteine.

Brief Summary Text - BSTX (15):
(2) A protein having the ability to **regenerate luciferin** by acting on oxyluciferin and D-cysteine, which is obtained by purifying an extract from a living body by a process of luminescence through purification steps including a chromatography step.

Detailed Description Text - DETX (10):
The gist of the present invention is as follows: a protein having the ability to **regenerate luciferin** by acting on oxyluciferin and D-cysteine is provided according to the present invention, and by adding this protein to a luciferase reaction system the luminescence can persist and the amounts of enzyme and luciferin used can be reduced.

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  * * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 14:49:33 ON 06 AUG 2003

=> fil .bec
COST IN U.S. DOLLARS                                    SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

FILES 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS, NTIS,
       ESBIOBASE, BIOTECHNO, WPIDS' ENTERED AT 14:49:44 ON 06 AUG 2003
ALL COPYRIGHTS AND RESTRICTIONS APPLY.  SEE HELP USAGETERMS FOR DETAILS.

11 FILES IN THE FILE LIST

=> s luciferin(5a)regenerat?
FILE 'MEDLINE'
           739 LUCIFERIN
         63195 REGENERAT?
L1           2 LUCIFERIN(5A)REGENERAT?

FILE 'SCISEARCH'
           745 LUCIFERIN
         72353 REGENERAT?
L2           2 LUCIFERIN(5A)REGENERAT?

FILE 'LIFESCI'
           452 LUCIFERIN
         18382 REGENERAT?
L3           2 LUCIFERIN(5A)REGENERAT?

FILE 'BIOTECHDS'
           143 LUCIFERIN
         13403 REGENERAT?
L4           2 LUCIFERIN(5A)REGENERAT?

FILE 'BIOSIS'
          1243 LUCIFERIN
         82952 REGENERAT?
L5           4 LUCIFERIN(5A)REGENERAT?

FILE 'EMBASE'
           704 LUCIFERIN
         46982 REGENERAT?
L6           1 LUCIFERIN(5A)REGENERAT?

FILE 'HCAPLUS'
          2268 LUCIFERIN
        142873 REGENERAT?
L7          15 LUCIFERIN(5A)REGENERAT?

FILE 'NTIS'
            41 LUCIFERIN
          7889 REGENERAT?
L8           0 LUCIFERIN(5A)REGENERAT?

FILE 'ESBIOBASE'
           262 LUCIFERIN
         26291 REGENERAT?
L9           2 LUCIFERIN(5A)REGENERAT?

FILE 'BIOTECHNO'
           268 LUCIFERIN
         13703 REGENERAT?
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L10           2 L? 'IFERIN(5A)REGENERAT?

FILE 'WPIDS'
          287 L?'IFERIN
        84801 REGENERAT?
L11           4 L?'IFERIN(5A)REGENERAT?

TOTAL FOR ALL FILES
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=> s l12 not 2001-2003/py
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      1341979 2 01-2003/PY
L13           0 L? NOT 2001-2003/PY

FILE 'SCISEARCH'
      2454464 2 01-2003/PY
L14           1 L? NOT 2001-2003/PY

FILE 'LIFESCI'
       233279 2 01-2003/PY
L15           0 L? NOT 2001-2003/PY

FILE 'BIOTECHDS'
        50486 2 01-2003/PY
L16           0 L? NOT 2001-2003/PY

FILE 'BIOSIS'
      1289472 2 01-2003/PY
L17           2 L? NOT 2001-2003/PY

FILE 'EMBASE'
      1118376 2 01-2003/PY
L18           1 L? NOT 2001-2003/PY

FILE 'HEALTHDS'
      2562931 2 01-2003/PY
L19           4 L? NOT 2001-2003/PY

FILE 'NTIS'
        26116 2 01-2003/PY
L20           0 L? NOT 2001-2003/PY

FILE 'ESBIOBASE'
       721319 2 01-2003/PY
L21           1 L? NOT 2001-2003/PY

FILE 'BIOTECHNO'
         5759 2 01-2003/PY
L22           1 L? NOT 2001-2003/PY

FILE 'WPIDS'
      2477154 2 01-2003/PY
L23           1 L? NOT 2001-2003/PY

TOTAL FOR ALL FILES
L24          12 L? NOT 2001-2003/PY

=> dup r  l24
PROCESSING COMPLETED FOR L24
L25           6 DUP REM L24 (6 DUPLICATES REMOVED)

=> d tot
```

L25 ANS 2 1 2 6 HCAPLUS COPYRIGHT 2003 ACS on STN
TI Mic organism measuring method.
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
IN Sak Kibara, Tatsuya; Murakami, Shigeharu
AN 19 :198898 HCAPLUS
DN 130:234323

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11069994	A2	19990316	JP 1997-316621	19971104

L25 AN 2 1 2 6 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN DUPLICATE 1
TI In ase a r porter gene for transformation studies in rice (Oryza sa L.)
SO PLANT CELL REPORTS, (MAY 1999) Vol. 18, No. 9, pp. 715-720.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 0721- 714.
AU Ba Wolfl J; Harwood W A; Lonsdale D A; Harvey A; Hull R; Snape J W (Reprint)
AN 19 :121621 SCISEARCH

L25 AN 3 1 2 6 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
DU DATE
TI En m involved in **regenerating** firefly **luciferin**.
SO Of ce tte the United States Patent and Trademark Office Patents, (Sept. 26, 1995) Vol. 1214, No. 5, pp. 5300.
ISSN: 0098- 133.
AU Ka y m, M.
AN 20 :120088 BIOSIS

L25 AN 4 1 2 6 HCAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 3
TI Fi y protein involved in **regenerating luciferin** fr xyluciferin and D-cysteine
SO Eu t. Appl., 4 pp.
CODEN: EPXXDW
IN K y , Naoki
AN 1 :178 HCAPLUS
DN 1 :1 3

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 821297	A2	19980225	EP 1997-306406	19970821
EP 821297	A3	19990908		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

L25 A 5 1 2 6 HCAPLUS COPYRIGHT 2003 ACS on STN
TI P f ti of protein associated with **regeneration** of **luciferin** from oxyluciferin and cysteine
SO J Kai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
IN K y , Naoki
AN 1 :1 HCAPLUS
DN 1 :1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 10179	A2	19980506	JP 1997-219375	19970814

L25 A 6 1 2 6 HCAPLUS COPYRIGHT 2003 ACS on STN
TI B lu ner nce assay. Principles and practice
SO M o f lochemical Analysis (1968), 16, 99-181
CODEN: MBAAA; ISSN: 0076-6941
AU S k , Bernard L.
AN 1 :1 HCAPLUS
DN 6 :2

=> d a

L25 A 1 (6 HCAPLUS COPYRIGHT 2003 ACS on STN
AB A , nsitive and rapid method is described for measuring
m rganism trapped on filter membrane. Microorganism is trapped on
f membrane by filtering a sample liq. contg. microorganism through
m br iol. constituents are extd. from the trapped microorganism and
h l th membrane. Then, luminescence generated on the membrane is
m u after adding ATP generating reaction reagents and bioluminescence
r s. In this method, increased luminescence is obsd. by converting
y ad osine-phosphate esters to ATP and by regenerating consumed
A .

L25 A 1 (6 SCISEARCH COPYRIGHT 2003 THOMSON ISI on STN DUPLICATE 1
AB fe ed rice plants of var 'TN1' were regenerated from immature
  y fo owing particle bombardment with a construct containing the
f l luciferase gene as a reporter gene and the hygromycin resistance
g a lectable marker. Expression of the luciferase gene in the
p e the substrate luciferin was visualised in the calli derived
f bar ed immature embryos and in the leaves and roots of the
r te transformed plants using a low light imaging system
  gra). Embryogenic callus proliferation and plant
r ation were unaffected by **luciferin** treatment and
  apl screening. The quantitative Luc assay using samples of leaf
t fro the segregating generations gave early information about the
h us nd hemizygous state of the luc transgene.

L25 A 1 (6 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC. on STN
D E

L25 A 1 (6 HCAPLUS COPYRIGHT 2003 ACS on STN DUPLICATE 3
AB A ring the ability to **regenerate luciferin**
k g oxyluciferin and D-cysteine was purified from 2 firefly
s (L ibla cruciata and L. lateralis). The L. cruciata enzyme has
o pH and temp. of pH 7-8 and 35-50.degree., and retains .gtoreq.80%
a n after thermal treatment at 50.degree. for 30 min, whereas
t lat alis enzyme has pH and temp. optima of pH 8-9 and
  g ., resp., and retains .gtoreq.80% activity at 50.degree. for
  adding this protein to a luciferin/luciferase reaction system,
t lu escence can persist and the amt. of luciferase and luciferin
u l reduced.

L25 A 1 (6 HCAPLUS COPYRIGHT 2003 ACS on STN
AB A protein capable of **regenerating luciferin** from
o ferin and D-cysteine is purified from fire fly lantern ext. (Sigma
f series of chromatog. The protein exhibits a pH optimum
  , temp. optimum 35.apprx.50.degree., and mol. wt. 40,000 by
S . It retains >80% active after incubating at 50.degree. for 30
m protein may improves the efficiency and duration of
l ne .

L25 A 1 (6 HCAPLUS COPYRIGHT 2003 ACS on STN
AB I m the firefly Photinus pyralis, the pyrophosphatase (I)
h hydrolyzed pyrophosphate (II) (endogenous or exogenous) with
e light. With excess amts. of II, the light was weak, but
i intensity increased as II was hydrolyzed. II also promoted
t of adenyloxyluciferin (III) by luciferase with the
r ti of ATP and oxidized **luciferin**. The addn.
o luciferin and luciferin-AMP caused a flash of luminescence by
  synthesis of ATP from III and ATP utilization in adenyl-luciferin
f n. Other reactions involving I are described. Procedures for ADP
a ty are considered. Sources of error in measurements of

... and procedures for controlling them are described.

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=> fil
COST I          D    ARS                                    SINCE FILE      TOTAL
                                                               ENTRY    SESSION
FULL E          T    ST                                        31.29      31.50

DISCOU . /      TH   (FOR QUALIFYING ACCOUNTS)              SINCE FILE      TOTAL
                                                               ENTRY    SESSION
CA SU  CF       I.CE                                          -2.60      -2.60

FILES .         TH , HCAPLUS, WPIDS' ENTERED AT 14:52:37 ON 06 AUG 2003
ALL CO  T       S .D RESTRICTIONS APPLY.  SEE HELP USAGETERMS FOR DETAILS.

3 FILE  I       E  LE LIST

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FILE '          ...
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            .   9    Y<=2000
                     (PRY<=.000)
L26             9    1 AND W  PC AND PRY<=2000

FILE '  '       '
                3    /PC
                3    .Y<=2000
L27             4     AND W  PC AND PRY<=2000

FILE '  .
              2     1    /PC
             13     7    .Y<=2000
                         (PRY<=.000)
L28           9      1 AND WO/PC AND PRY<=2000

TOTAL           F   ES
L29             1   AND WO/PC AND PRY<=2000

=> dup  .       9
PROCES  '       MI  TED FOR L29
L30             4    UP REM L29 (4 DUPLICATES REMOVED)

=> d t t

L30   ..        1   6  BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT/ISI on STN
TI    .         1   enella-originated genes encoding proteins capable of
          e     at  g luciferin especially from oxyluciferin,
          .     fo  producing recombinant DNAs and transformants to give proteins
          '     in  assaying adenosine triphosphate;
                '   diated gene transfer and expression in host cell and DNA
                    e use in medicine and food hygiene
AU        H     '   KUROSAWA K; KAJIYAMA N
AN        2     17  BIOTECHDS
PI    O .       1   Feb 2002

L30   1         3   6  BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT/ISI on STN
TI                    cruciata-originated genes encoding proteins capable of
          e       at  g luciferin especially from oxyluciferin,
                  h   recombinant DNAs and transformants;
                      luminescence useful for medicine and food hygiene
AU        '       A   KUROSAWA K; KAJIYAMA N
AN                    BIOTECHDS
PI        )       01  7 Feb 2002
```

L30 A[illegible] HCAPLUS COPYRIGHT 2003 ACS on STN
TI L[illegible] n-regenerating enzyme from Japanese firefly
L[illegible] lateralis
SO J[illegible] ai T kkyo Koho, 11 pp.
C[illegible] KXXA.
IN H[illegible], Ko[illegible]; Kurosawa, Keiko; Kajiyama, Naoki
AN 2[illegible]7 HCAPLUS
DN 1[illegible]32

PA[illegible]	[illegible]	KIND	DATE	APPLICATION NO.	DATE
PI J	[illegible]	A2	20020205	JP 2000-228227	20000728
W	[illegible]	A1	20020207	WO 2001-JP6455	20010726 <--
	US				
	AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
E	[illegible]25	A1	20030502	EP 2001-954353	20010726 <--
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				

L30 A[illegible] HCAPLUS COPYRIGHT 2003 ACS on STN
TI L[illegible] n-regenerating enzyme from Japanese firefly
I[illegible] [illegible]ata
SO J[illegible] [illegible]i T kkyo Koho, 11 pp.
C[illegible] KXXA.
IN H[illegible], Kor[illegible]; Kurosawa, Keiko; Kajiyama, Naoki
AN [illegible]4 HCAPLUS
DN 1[illegible] 4 17

PA[illegible]	[illegible]	KIND	DATE	APPLICATION NO.	DATE
PI J	02[illegible]	A2	20020205	JP 2000-228226	20000728
W	[illegible]	A1	20020207	WO 2001-JP6454	20010726 <--
	[illegible]E				
	[illegible]AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
E	[illegible]4	A1	20030502	EP 2001-954352	20010726 <--
	[illegible]AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				

L30 [illegible]ER [illegible] OF [illegible] BIOTECHDS COPYRIGHT 2003 THOMSON DERWENT/ISI on STN
TI [illegible]fe[illegible]in regenerating protein and gene encoding it,
[illegible]ul for regenerating expensive **luciferin** from
[illegible]o[illegible]ferin and D-cysteine;
[illegible]e[illegible]combin[illegible]t protein production in Escherichia coli
AU [illegible]a[illegible]a H; Kajiyama N
AN [illegible] BIOTECHDS
PI [illegible] 12 Apr 2001

L30 [illegible] [illegible] OF [illegible] HCAPLUS COPYRIGHT 2003 ACS on STN
TI [illegible]t[illegible] ATP regeneration system from polyphosphate and AMP by [illegible]phosphate synthase and polyphosphate:AMP phosphotransferase or [illegible]la[illegible] kinase
SO P[illegible]nt. Appl., 51 pp.
C[illegible] KXXD.
IN [illegible], Hi[illegible]; Kuroda, Akio; Tanaka, Shotaro
AN [illegible] HCAPLUS
DN [illegible]

[illegible]	[illegible]	KIND	DATE	APPLICATION NO.	DATE
PI [illegible]	[illegible]	A1	20010726	WO 2001-JP238	20010117 <--
[illegible]	CN, [illegible]				
W[illegible]	AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
J	01[illegible]	A2	20010807	JP 2000-28976	20000207
[illegible]	01[illegible]	A2	20011023	JP 2000-112790	20000414

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C     01[illegible]9        A2    20011030        JP 2000-119798    20000420
C     01[illegible]0        A2    20011002        JP 2000-362340    20001129 <--
E     [illegible]           A1    20021211        EP 2001-901364    20010117 <--
        R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
           IE, SI, CY, TR
US    [illegible]           A1    20030403        US 2002-188091    20020703 <--
```

=> d a[illegible]

L30 [illegible] HCAPLUS COPYRIGHT 2003 ACS on STN

AB [illegible] reaction system wherein AMP is converted into ADP by [illegible] with adenylate kinase (AdK) or polyphosphate:AMP [illegible]erase (PPT) in the presence of a trace amt. of ATP and the [illegible] is converted into ATP and a polyphosphate (polyP) compd. by [illegible] with polyphosphate synthase in the presence of a polyphosphate [illegible] is disclosed. Application of the reaction system in detection of [illegible]ine nucleotide or RNA by using bioluminescence kit contg. firefly [illegible]ferase and luciferin is described. RNA is degraded to mononucleotides [illegible]Nase treatment prior to the use of the reaction system. The system [illegible] alternative to existing enzymic ATP regeneration systems in [illegible] phosphoenolpyruvate and acetylphosphate serve as phosphoryl donors [illegible] advantage that AMP and polyP are stabile, inexpensive [illegible].

=> log [illegible]

COST [illegible]	SINCE FILE ENTRY	TOTAL SESSION
FULL [illegible]	66.86	98.36

DISCO[illegible] (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SU[illegible]	-0.65	-3.25

STN [illegible] LOGOFF AT 15:07:24 ON 06 AUG 2003